



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/580,343	05/25/2000	Brigitte Benage	D-6387	8093
7590	11/03/2003		EXAMINER	
Raymond D Thompson Uniroyal Chemical Company Inc World Headquarters Middlebury, CT 06749			THEXTON, MATTHEW	
			ART UNIT	PAPER NUMBER
			1714	

DATE MAILED: 11/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/580,343	Applicant(s) BENAGE ET AL.	
	Examiner Matthew A. Thexton	Art Unit 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 August 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-121 is/are pending in the application.
- 4a) Of the above claim(s) See Continuation Sheet is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, 9, 15-17, 30-46, 48, 49, 52, 58-60, 73 and 75-89 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \*   c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

Continuation of Disposition of Claims: Claims withdrawn from consideration are 4,7,8,10-14,18-29,47,50,51,53-57,61-72,74 and 90-121.

**DETAILED ACTION**

***Terminal Disclaimer***

The terminal disclaimer filed on 2003 August 15 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 6403850 has been reviewed and is accepted. The terminal disclaimer has been recorded.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 1-3, 5, 6, 9, 15, 30-46, 48, 49, 52, 58, 73, 75-89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Winter et al. (US 5254760).

Claims 1-3, 5, 6, 9, 15, 30-43 require adding the elected polymerization inhibitor additive DNBP to a mixture of ethylenically unsaturated monomer and living polymer; with claims 30-43 having limitations: that there are impurities, that the impurities arise from the monomer production or purification, that the polymer is either soluble or insoluble with respect to the monomer, that the monomers are undergoing purification by distillation.

The reference discloses DNBP as polymerization inhibitor for ethylenically unsaturated monomers (column 4, line 12). The inhibitor is disclosed to be added to distillation purification process (paragraph bridging columns 4 and 5). The reference discloses tests in columns 5 and 6 in which the inhibitor is demonstrated to reduce the amount of formed polymer impurity, but clearly does not eliminate it. It would have been

obvious to one of ordinary skill in the art at the time of the invention in view of the reference disclosure that the polymerization inhibitor may be added to monomer or to monomer in the presence of polymer impurity and thereby effectively reduce the amount of polymer formed, but not entirely eliminate it.

Claims 44-46, 48, 49, 52, 58, 73, 75-89 require adding the elected polymerization inhibitor additives (A) DNBP and (B) 4-oxo-TEMPO to a mixture of ethylenically unsaturated monomer and living polymer; with claims 76-89 having limitations: that there are impurities, that the impurities arise from the monomer production or purification, that the polymer is either soluble or insoluble with respect to the monomer, that the monomers are undergoing purification by distillation.

The reference discloses DNBP as polymerization inhibitor for ethylenically unsaturated monomers (column 4, line 12) further formulated with nitroxyl compounds (column 3, lines 3-14 and 32). The inhibitor formulation is disclosed to be added to distillation purification process (paragraph bridging columns 4 and 5). The reference discloses tests in columns 5 and 6 in which the inhibitor formulation is demonstrated to reduce the amount of formed polymer impurity, but clearly does not eliminate it. It would have been obvious to one of ordinary skill in the art at the time of the invention in view of the reference disclosure that the polymerization inhibitor formulation may be added to monomer or to monomer in the presence of polymer impurity and thereby effectively reduce the amount of polymer formed, but not entirely eliminate it.

The reference discusses the problems of unwanted reactions (polymerization) of monomers in production and purification processes of ethylenically unsaturated

monomers. To the extent that this disclosure is not perfected stating the conditions of the claims 30-43 and 76-89, such conditions are considered either inherent or obvious to one of ordinary skill in the art at the time of the invention when the disclosure is practiced as described. Official notice is taken of the requirement in applicant's claims to the presence of impurities arising from monomer production and/or purification; such are notoriously well known and inevitable, as acknowledged by applicant in the background and the references cited in the background.

2. Claims 16, 17, 59 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Winter et al. (US 5254760) as applied to claims 2 and 45 above, and further in view of Odian and Quintens et al. (US 5372924) and Rosenkranz et al. (US 4053504).

Claims 16 and 59 require the addition of a transition metal.

Claims 17 and 60 further specified the metal to be copper. Odian discloses the use of copper chloride as polymerization inhibitor for ethylenically unsaturated monomers (Table 3-9, page 263). Quintens discloses copper naphthenate as polymerization inhibitor for curable compositions containing ethylenically unsaturated components (paragraph bridging columns 6 and 7). Rosenkranz discloses copper naphthenate as polymerization inhibitor for ethylenically unsaturated monomers (paragraph bridging columns 2 and 3). Individually these references establish that it is known to use copper ion (i.e., in salt form) as polymerization inhibitor for ethylenically unsaturated monomers. It would have been obvious to one of ordinary skill in the art at the time of the invention to employ copper (salt or ion) as an additional polymerization

Art Unit: 1714

inhibitor for ethylenically unsaturated monomers because combining additives for their known functions, even in combinations for the same function, is routine.

***Citation of Pertinent Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

References JP 51095490A, 59131614A, 60088023A, as understood from the corresponding Derwent and JPO abstracts disclose ethylenically unsaturated monomers with polymerization inhibitor formulations comprising copper naphthenate and compounds which are hydrogen donors or electron acceptors.

***Response to Arguments***

Applicant's arguments filed 2003 August 15 have been fully considered but they are not persuasive.

The rejections over Benage et al. (US 6403850) have been rendered moot by the Terminal Disclaimer noted hereinabove.

At page 22 of Applicant's submission of 2003 August 15 are presented arguments in rebuttal of the statements of prima facie obviousness in the Office action of 2003 March 18. The thrust of these arguments is that the claimed invention is to a new use of hydrogen donors or electron acceptors as anti-growth agents. The Examiner respectfully disagrees with the contention that a new use has been claimed.

The Winter reference discloses that use of DNBP alone and in combination with nitroxyl additive reduces the amount of polymer formed in distillation purification of

ethylenically unsaturated monomer by admixing them, and, as necessary, to add more. That polymer impurities are present is apparent from the tests set forth.

Applicant's claims and test results merely restate and confirm the disclosure of the reference; that the inhibitor or inhibitor mixture reduces the amount of polymer formed from the ethylenically unsaturated monomers during distillation purification. While applicant may have identified that the amount of polymer formed is less and is also of lower molecular weight, such is not claimed and such information is not a new use.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.



Application/Control Number: 09/580,343  
Art Unit: 1714

Page 7

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew A. Thexton whose telephone number is 703-305-5085. The examiner can normally be reached on Monday-Thursday, 8:30 to 6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasudevan S Jagannathan can be reached on 703-306-2777. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Matthew A. Thexton  
Primary Examiner  
Art Unit 1714